

SECTION 8

8.10 DUCTILE IRON PIPE:

- A. Push-on Joint: Immediately before joining two lengths of ductile iron pipe, the inside of the bell, the outside of the spigot end, and the rubber gasket shall be thoroughly cleaned to remove oil, grit, excess coating, and other foreign matter. The rubber gasket shall be flexed inward and inserted in the gasket recess of the bell socket. Caution shall be exercised to ensure the correct type of gasket is used.

A thin film of gasket lubricant shall be applied to either the inside face of the gasket, or the spigot end of the pipe, or both.

The spigot end of the pipe shall be placed in the bell end with care to prevent the joint from contacting the ground. The joint shall be completed with a slow, steady pressure without jerky or jolting movements. Pipe furnished without a depth mark shall be marked before assembly to assure insertion to full depth of the joint. The spigot end of field cut pipe lengths shall be filed, or ground to resemble the spigot end of such pipe as manufactured.

- B. Mechanical Joint: Before joining mechanical joint cast iron fittings to ductile iron pipe, the outside of the spigot, the inside of the bell, and the rubber gasket shall be thoroughly cleaned to remove oil, grit, excess coating, and other foreign matter.

Normal practice is to lubricate the joint with a soap solution; however, in cold weather the joint may be assembled dry if approved by Denver Water. Extreme care shall be exercised in making dry joints.

The cast iron gland shall be slipped on the spigot end of the pipe with the lip extension of the gland toward the socket, or bell end. The rubber gasket shall be placed on the spigot end with the thick edge toward the gland.

The pipe shall be pushed in until the spigot end fully penetrates the bell. The gasket shall then be pressed into place within the bell evenly around the entire joint. The cast iron gland shall be moved along the pipe into position for bolting; the bolts inserted, and the nuts screwed finger tight, then tightened with a torque limiting wrench. Torques for the various sizes of bolts shall be as follows:

<u>Pipe Size (inches)</u>	<u>Bolt Size (inches)</u>	<u>Range of Torque (foot-pounds)</u>
3	5/8	45-60
4-24	3/4	75-90
30-36	1	100-120
42-48	1-1/4	120-150

Nuts spaced 180 degrees apart shall be tightened alternately in order to produce equal pressure on all parts of the gland.

All mechanical joint fittings shall be wrapped with polyethylene encasement material in accordance with 6.41, A.

- C. Flexible Coupled Joint: When installing flexible steel couplings, care shall be taken that the connecting pipe ends, couplings, and gaskets are clean and free of all dirt and foreign matter with special attention given to the contact surfaces of the pipe, gaskets, and couplings. These couplings shall be assembled and installed in conformity with the recommendation and instructions of the coupling manufacturer.

All flexible coupled joints shall be wrapped with polyethylene encasement material in accordance with 6.41, A.

Wrenches used in bolting couplings shall be of a type and size recommended by the coupling manufacturer. Coupling bolts shall be tightened so as to secure a uniform annular space between the follower rings and the body of the pipe and all bolts tightened approximately the same amount. Diametrically opposite nuts shall be tightened progressively and evenly. Final tightening shall be done with a torque limiting wrench set for the torque recommended by the coupling manufacturer.